

6. Tune-Up Procedure

The STR-590 Digital Telemetry Radio has been designed to be integrated into the Digi-Linq unit. As such, a user typically does not control nor configure the unit. Factory programming is accomplished using a digital command interface and a set of dip-switches.

Since the STR-590 is a half-duplex transceiver, it should either be configured as a transmitter or a receiver. This is accomplished by interconnecting an appropriate cable to either the receive or transmit header. The cable itself provides a strap which notifies the onboard processor to operate in transmit or receive mode of operation. Simultaneous connection to both the receive and transmit headers is not recommended.

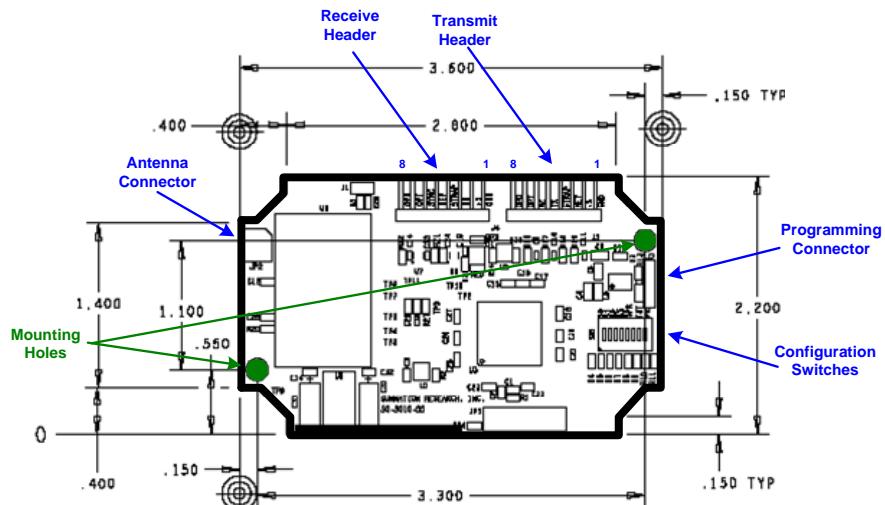


Figure 2 *Board Layout and Connector Locations*



Transmit Header

The transmit header (connector J3 on the board) contains the following signals at the pin locations as indicated by the previous drawing. Note that the “SIGNAL” column in this table reflects the name of the signal as shown on the silkscreen of the J3 header on the top side of the board.

Table 3 Transmit Header Signal and Pin Definitions

<u>PIN</u>	<u>SIGNAL</u>	<u>DESCRIPTION</u>
1	GND	GROUND FOR THE STR-590 BOARD.
2	+5	+5 VDC INPUT FOR THE BOARD IN TRANSMIT MODE. INPUT SHOULD BE AT +5 VDC +/- 5% AND SHOULD SUPPORT AN IN-RUSH CURRENT OF 200 MILLI-AMPS AND A STEADY STATE CURRENT OF 125 MILLI-AMPS.
3	KEY	NON-FUNCTIONAL PIN WHICH CAN BE USED AS A KEY LOCATION IF SO DESIRED SUCH THAT A CABLE BUILT FOR THE RECEIVE HEADER WILL NOT BE COMPATIBLE WITH THE TRANSMIT HEADER.
4	STRAP	SIGNAL WHICH WHEN CONNECTED VIA THE CABLE TO THE TX PIN WHICH FOLLOWS INSTRUCTS THE STR-590 PROCESSOR TO OPERATE AS A TRANSMITTER.
5	TX	SEE ABOVE EXPLANATION
6	NC	PIN NOT CONNECTED TO STR-590 LOGIC
7	OPT	ONCE PER TURN SIGNAL FOR TRANSMIT OPERATION. THIS INPUT SIGNAL SHOULD BE AT STANDARD TTL LEVELS. WHEN OPERATING IN TEST MODE, THIS PIN SHOULD BE DRIVEN WITH THE TEST CLOCK INPUT SIGNAL AT 152.3 KHZ +/- 2%.
8	OPD	ONCE PER DEGREE SIGNAL FOR TRANSMIT OPERATION. THIS INPUT SIGNAL SHOULD BE AT STANDARD TTL LEVELS. WHEN OPERATING IN TEST MODE, THIS PIN SHOULD BE DRIVEN WITH THE TEST DATA INPUT SIGNAL.

Receive Header

The receive header (connector J4 on the board) contains the following signals at the pin locations as indicated by the previous drawing. Note that the “SIGNAL” column in this table reflects the name of the signal as shown on the silkscreen of the J4 header on the top side of the board.

Table 4 Receive Header Signal and Pin Definitions

<u>PIN</u>	<u>SIGNAL</u>	<u>DESCRIPTION</u>
1	GND	GROUND FOR THE STR-590 BOARD.
2	+5	+5 VDC INPUT FOR THE BOARD IN RECEIVE MODE. INPUT SHOULD BE AT +5 VDC +/- 5% AND SHOULD SUPPORT AN IN-RUSH CURRENT OF 200 MILLI-AMPS AND A STEADY STATE CURRENT OF 50 MILLI-AMPS.
3	RX	SIGNAL WHICH WHEN CONNECTED VIA THE CABLE TO THE STRAP PIN WHICH FOLLOWS INSTRUCTS THE STR-590 PROCESSOR TO OPERATE AS A RECEIVER.
4	STRAP	SEE ABOVE EXPLANATION
5	KEY	NON-FUNCTIONAL PIN WHICH CAN BE USED AS A KEY LOCATION IF SO DESIRED SUCH THAT A CABLE BUILT FOR THE RECEIVE HEADER WILL NOT BE COMPATIBLE WITH THE TRANSMIT HEADER.
6	SYNC	PIN NOT CONNECTED TO STR-590 LOGIC
7	OPT	ONCE PER TURN SIGNAL FROM RECEIVE OPERATION. THIS OUTPUT SIGNAL WILL BE AT STANDARD TTL LEVELS. WHEN OPERATING IN TEST MODE, THIS PIN WILL BE DRIVEN WITH THE RECOVERED TEST CLOCK OUTPUT SIGNAL (NOMINALLY AT 152.3 KHZ).
8	OPD	ONCE PER DEGREE SIGNAL FROM RECEIVE OPERATION. THIS OUTPUT SIGNAL WILL BE AT STANDARD TTL LEVELS. WHEN OPERATING IN TEST MODE, THIS PIN WILL BE DRIVEN WITH THE RECOVERED TEST DATA OUTPUT SIGNAL.



Antenna

The antenna connector is labeled JP2 on the board. The connector is a H.FL-R-SMT connector from Hirose. The center conductor for the connector contains the RF input/output to/from the transceiver logic which should be at 915 MHz +/- 15 MHz. In transmit mode, the signal may be as high as +15 dBm. A continuous input signal of +10 dBm into the unit in receive mode will not damage the item.

Programming Header

The programming header (connector J2 on the board) contains the signals required to reprogram the processor on the board. This header should only be used with an appropriate adaptor connector provided by SRI which will allow the interface to be connected to a DE-9 cable to a standard PC RS-232 serial port. PC Software and instructions on utilizing the interface are provided when a field upgrade is required of STR-590 Digital Telemetry Radio Boards.

Switch Definitions

An 8 position dip switch on the board is labeled SW1. It contains the switches to control the configuration of the unit as described in the following table. Note that the "LABEL" column in this table reflects the name of the switch as shown on the silkscreen of the SW1 dipswitch on the top side of the board.

Table 5 Switch Definitions and Assignments

<u>SWITCH</u>	<u>LABEL</u>	<u>DESCRIPTION</u>	
1	S0	LEAST SIGNIFICANT BIT OF A 4 BIT VALUE FORMED BY S3/S2/S1/S0. THE VALUE OF THESE SWITCHES CONTROL THE TRANSMIT/RECEIVE FREQUENCY OF THE STR-590 AS FOLLOWS:	
	0 – 915 MHZ	15 – 913.976 MHZ	
	1 – 916.024 MHZ	14 – 912.952 MHZ	
	2 – 917.048 MHZ	13 – 911.928 MHZ	
	3 – 918.072 MHZ	12 – 910.904 MHZ	
	4 – 919.096 MHZ	11 – 909.880 MHZ	
	5 – 920.120 MHZ	10 – 908.856 MHZ	
	6 – 921.144 MHZ	9 – 907.832 MHZ	
	7 – 922.168 MHZ	8 – 906.808 MHZ	
2	S1	SEE ABOVE EXPLANATION	
3	S2	SEE ABOVE EXPLANATION	
4	S3	SEE ABOVE EXPLANATION	
5	SPR	WHEN SET, ENABLES SPREAD SPECTRUM MODE OF OPERATION OF THE UNIT.	
6		SPARE SWITCH – NOT CURRENTLY USED BY STR-590.	
7	TST	SWITCH WHICH ENABLED TEST MODE OF OPERATION OF THE STR-590.	
8	PR	SWITCH WHICH ENABLES PROGRAMMING MODE OF THE PROCESSOR OF THE STR-590.	